

REMARKS***Claim rejections, § 103***

The applicants cancel claims 6-10 and 26-28.

The applicants disagree with the examiner's rejection of claims 1 and 11 and offer the following explanation. Contrary to the examiner's assertion, Mifsud's device depicted in his Fig. 2 will not generate waves with opposite polarity. The examiner confuses movement of the two pistons with polarity of the resulting pressure pulses. The examiner has inadvertently made the same mistake as in the previous office action when analyzing the Yang patent. Equally applicable to Mifsud is the applicants' response to Yang:

The applicants respectfully point out that in the case of an isotropic source such as Yang's, the up-going part of the spherical wave has particle velocity directed upward, and the down-going part has particle velocity directed downward. That might seem to suggest that Yang's up-going and down-going waves have "opposite polarity" (quote from claim 1 of the present application). That would be an incorrect analysis. *Polarity* as applied to two waves refers to their phase relative to each other; if they are in phase, they would combine constructively, but if out of phase they combine destructively. Particle velocity can be used to determine phase, but for phase purposes the velocity must be taken relative to the direction of wave propagation. For an isotropic source, the up-going wave component has particle velocity vector aligned with the wave propagation velocity vector. The same is true for the down-going wave. Therefore, the up-going wave and the down-going wave from an isotropic source such as Yang teaches have the same polarity and phase.

So Mifsud is correct when he says that "the resulting movement of the acoustic radiating plates 10 and 12 is 180° out of phase." But that merely means the particle velocity for the two waves is opposite: when the velocity for plate 12 is up, the velocity for plate 10 is down. But relative to their respective directions of propagation, they are the same, meaning the waves have the same phase/polarity. The

practical consequence of this is that as a marine seismic source, this device will result in low frequencies strongly attenuated by ghosting.

Mifsud failing to disclose the opposite polarity feature of claims 1 and 11, the 103 rejection of these two independent claims, and the claims that depend from them, cannot stand.

**AMENDMENTS TO THE CLAIMS**

Claims 1 and 11 are amended as shown below in the complete current listing of claims to eliminate dual terminology. The change made is as suggested by the examiner. Claim 14 is amended to correct the number of the claim from which it depends, which as the examiner suggests was a typographical error. A complete listing of the claims, as amended herein, follows.